

Amendments to the Claims

This listing of claims will replace all previous versions and listing of claims in the application.

Listing of Claims

1. (Previously Presented): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix comprising at least one of silica,

glass, insoluble synthetic polymers, or insoluble polysaccharides,

a nucleic acid binding portion for attracting and non-covalently and non-sequence
5 specifically binding nucleic acids wherein the nucleic acid binding portion

comprises at least one of a ternary sulfonium group, a quaternary ammonium, or

a quaternary phosphonium group PR_3^+X^- , and

a cleavable linker portion linking the nucleic acid binding portion to the solid

support.

2. (Original): The solid phase of claim 1 wherein the nucleic acid binding portion is

selected from a ternary sulfonium group of the formula SR_2^+X^- where R is selected from

 $\text{C}_1\text{-C}_{20}$ alkyl, aralkyl and aryl groups, a quaternary ammonium group of the formula

 NR_3^+X^- where R is selected from $\text{C}_4\text{-C}_{20}$ alkyl, aralkyl and aryl groups, and a quaternary
5 phosphonium group of the formula PR_3^+X^- where R is selected from $\text{C}_1\text{-C}_{20}$ alkyl, aralkyl

and aryl groups, and wherein X is an anion.

3. (Withdrawn): The solid phase of claim 2 wherein the nucleic acid binding portion is a quaternary ammonium group and the R groups each contain from 4-20 carbon atoms.
4. (Original): The solid phase of claim 2 wherein the nucleic acid binding portion is a quaternary phosphonium group and the R groups each contain from 1-20 carbon atoms.
5. (Original): The solid phase of claim 4 wherein each R group is a butyl group.
6. (Withdrawn): The solid phase of claim 1 wherein the solid support portion comprises an insoluble synthetic polymer.
7. (Withdrawn): The solid phase of claim 1 wherein the solid support portion comprises a glass matrix.
8. (Original): The solid phase of claim 1 wherein the solid support portion comprises a silica matrix.
9. (Original): The solid phase of claim 1 wherein the cleavable linker portion further comprises one or more connecting portions.

10. (Original): The solid phase of claim 1 further comprising a magnetically responsive portion.
11. (Previously Presented): The solid phase of claim 1 wherein the cleavable linker portion is hydrolytically cleavable.
12. (Original): The solid phase of claim 11 wherein the hydrolytically cleavable linker portion is an ester or thioester group.
13. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion is cleaved reductively.
14. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion comprises a triggerable dioxetane ring.
15. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion comprises an electron rich alkene which is cleaved by conversion to a thermally unstable dioxetane.
- 5 16. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion is cleaved enzymatically.

17. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises an acridan ketene dithioacetal which is cleaved by reaction with a peroxidase and a peroxide.

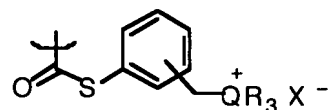
18. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises an ester which is cleaved by a hydrolase enzyme or an esterase enzyme.

19. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises an amide which is cleaved by a protease enzyme.

20. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises a peptide which is cleaved by a peptidase enzyme.

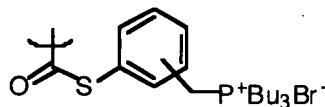
21. (Withdrawn): The solid phase of claim 16 wherein the cleavable linker portion comprises a glycoside which is cleaved by a glycosidase enzyme.

22. (Original): The solid phase of claim 12 wherein the cleavable linker portion comprises a thioester having the formula:



wherein Q is P or N and R is alkyl of 1-20 carbons.

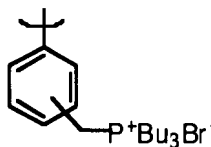
23. (Original): The solid phase of claim 22 wherein the cleavable linker portion comprises a thioester having the formula:



24. (Withdrawn): The solid phase of claim 1 wherein the cleavable linker portion is an alkylene group of at least one carbon atom bonded to a trialkylphosphonium or triarylphosphonium nucleic acid binding portion and is cleavable by means of a Wittig reaction with a ketone or aldehyde.

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25. (Withdrawn): The solid phase of claim 24 wherein the cleavable linker portion has the formula



26. (Withdrawn): The solid phase of claim 2 wherein the nucleic acid binding portion of the solid phase is a ternary sulfonium group of the formula $SR_2^+ X^-$ where R is selected from C_1 - C_{20} alkyl, aralkyl and aryl groups, and wherein X is an anion.

27. (Previously Presented): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix selected from silica, glass, insoluble

synthetic polymers, and insoluble polysaccharides,

a nucleic acid binding portion for attracting and non-covalently and non-sequence

specifically binding nucleic acids wherein the nucleic acid binding portion is a

quaternary phosphonium group $\text{PR}_3^+ \text{X}^-$ wherein R is selected from $\text{C}_1\text{-C}_{20}$

alkyl, aralkyl and aryl groups, and wherein X is an anion, and

a cleavable linker portion linking the nucleic acid binding portion to the solid

support wherein the cleavable linker portion is an ester or thioester group.

28. (Previously Presented): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix selected from silica, glass, insoluble

synthetic polymers, and insoluble polysaccharides,

a nucleic acid binding portion for attracting and non-covalently and non-sequence

5 specifically binding nucleic acids wherein the nucleic acid binding portion is a

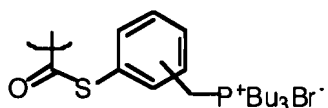
quaternary phosphonium group $\text{PR}_3^+ \text{X}^-$ wherein R is selected from $\text{C}_1\text{-C}_{20}$

alkyl, aralkyl and aryl groups, and wherein X is an anion, and

a cleavable linker portion linking the nucleic acid binding portion to the solid

support wherein the cleavable linker portion comprises a thioester having the

10 formula:



29. (New): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix comprising at least one of silica,
glass, insoluble synthetic polymers, or insoluble polysaccharides,

a nucleic acid binding portion for attracting and binding nucleic acids wherein the

5 nucleic acid binding portion consists essentially of at least one of a ternary
sulfonium group, a quaternary ammonium, or a quaternary phosphonium
group $\text{PR}_3^+ \text{X}^-$, and

a cleavable linker portion linking the nucleic acid binding portion to the solid
support.

30. (New): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix selected from silica, glass, insoluble
synthetic polymers, and insoluble polysaccharides,

a nucleic acid binding portion for attracting and binding nucleic acids wherein the

5 nucleic acid binding portion consists essentially of a quaternary phosphonium
group $\text{PR}_3^+ \text{X}^-$ wherein R is selected from C_1 - C_{20} alkyl, aralkyl and aryl
groups, and wherein X is an anion, and

a cleavable linker portion linking the nucleic acid binding portion to the solid
support wherein the cleavable linker portion is an ester or thioester group.

31. (New): A solid phase for binding nucleic acids comprising:

a solid support portion comprising a matrix selected from silica, glass, insoluble synthetic polymers, and insoluble polysaccharides,

a nucleic acid binding portion for attracting and binding nucleic acids wherein the

5 nucleic acid binding portion consists essentially of a quaternary phosphonium group $\text{PR}_3^+ \text{X}^-$ wherein R is selected from $\text{C}_1\text{-C}_{20}$ alkyl, aralkyl and aryl groups, and wherein X is an anion, and

a cleavable linker portion linking the nucleic acid binding portion to the solid

support wherein the cleavable linker portion comprises a thioester having the

10 formula:

